Amendments To The Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1 - 94. (Cancelled)

95. (Currently amended) A method for controlling microbial or biofilm growth in a medium, the method comprising mixing a nitrogen-containing compound or a mixture of such compounds, said nitrogen-containing compound being a salt containing nitrogen both in the cation portion and in the anion portion thereof, selected from the group consisting of salts of the formula $Y^{x-}[NH_2R^3R^4]^+_x$, wherein x is 1 to 3, Y^{x-} is a basic form of an acid Y that contains at least one moiety selected from the group consisting of a primary amine moiety, a secondary amine moiety, an amide moiety, an imide moiety, a sulfamide moiety, a sulfimide moiety, and an amineimine moiety, and $[NH_2R^3R^4]^+$ is an acidic form of a base NHR^3R^4 wherein R^3 and R^4 are each independently selected from the group consisting of H and C_{1-8} alkyl, or R^3 and R^4, together with the nitrogen atom to which they are attached, form a 5- to 10-member heterocyclic ring optionally substituted by one or more groups selected from C_{1-6} alkyl, C_{3-8} cycloalkyl, halogen, hydroxy, $-OC_{1-6}$ alkyl or $-OC_{3-8}$ cycloalkyl,

and an aqueous solution of a hypochlorite oxidant to form a biocide, wherein the molar ratio of $[NH_2R^3R^4]^+$ to said hypochlorite is at least 1:1, and

applying said biocide to said medium, wherein said biocide has a pH of between 9.0 and 11.5 immediately prior to being applied to said medium.

96. (Cancelled)

97. (Previously presented) A method according to claim 95, wherein Y^{x-} is of the formula $[RHN\text{-}A\text{-}COO]^{x-}$ or $[RHN\text{-}A\text{-}SO_3]^{x-}$, wherein:

A is a bond, straight-chain or branched $C_{2\text{-}20}$ alkyl, straight-chain or branched $C_{2\text{-}20}$ alkenyl, straight-chain or branched $_{2\text{-}20}$ alkynyl, $C_{3\text{-}10}$ cycloalkyl, straight-chain or branched $C_4\text{-}C_{20}$ alkylcycloalkyl, $C_{4\text{-}10}$ cycloalkenyl, $C_{4\text{-}10}$ cycloalkynyl, or $C_6\text{-}C_{10}$ aryl, wherein each $C_{1\text{-}20}$ alkyl, $C_{2\text{-}20}$ alkenyl, $C_{2\text{-}20}$ alkynyl, $C_{3\text{-}10}$ cycloalkyl, $C_4\text{-}C_{20}$ alkylcycloalkyl, $C_{4\text{-}10}$ cycloalkenyl, $C_{4\text{-}10}$ cycloalkynyl or $C_6\text{-}C_{10}$ aryl is optionally substituted with one or more groups selected from -COOH, -COH, $-SCH_3$, $-NH_2$, =NH, $-NHC(=NH)NH_2$, $-C(=O)NH_2$, -OH, 4-hydroxyphenyl, 5-imidazolyl, 3-indolyl, halogen, $-SO_3H$, =O, $C_{1\text{-}8}$ alkyl, $C_{3\text{-}8}$ cycloalkyl, $C_{4\text{-}9}$ cycloalkylalkyl, phenyl, 4-methylphenyl, benzyl, $-O\text{-}C_{3\text{-}8}$ cycloalkyl, $-O\text{-}C_{4\text{-}9}$ cycloalkylalkyl, -O-phenyl, -O-4-methylphenyl, -O-benzyl, $-SO_2R^7$ or $-NHR^7$ wherein R^7 is H, $C_{1\text{-}8}$ alkyl, phenyl, 4-methylphenyl, benzyl or $-NH_2$, and wherein each $C_{1\text{-}20}$ alkyl, $C_{2\text{-}20}$ alkenyl, $C_{2\text{-}20}$ alkynyl, $C_{3\text{-}10}$ cycloalkyl, $C_4\text{-}C_{20}$ alkylcycloalkyl, $C_{4\text{-}10}$ cycloalkenyl, $C_{4\text{-}10}$ cycloalkynyl or $C_6\text{-}C_{10}$ aryl optionally contains one to three heteroatoms selected from N, O and S;

R is selected from the group consisting of H, straight-chain or branched C_{1-20} alkyl, straight-chain or branched C_{2-20} alkenyl, straight-chain or branched C_{2-2}o alkynyl, C_{3-10} cycloalkyl, straight-chain or branched C_4-C_{20} alkylcycloalkyl, C_{4-10} cycloalkenyl, C_{4-10} cycloalkynyl, or C_6-C_{10} aryl, wherein each C_{1-20} alkyl, C_{2-20} alkenyl, C_{2-20} alkynyl, C_{3-10} cycloalkyl, C_4-C_{20} alkylcycloalkyl, C_{4-10} cycloalkenyl, C_{4-10} cycloalkynyl or C_6-C_{10} aryl is optionally substituted with one or more groups selected from -COOH, -COH, $-SCH_3$, $-NH_2$, =NH, $-NHC(=NH)NH_2$, $-C(=O)NH_2$, -OH, 4-hydroxyphenyl, 5-imidazolyl, 3-indolyl, halogen, $-SO_3H$, =O, C_{1-8} alkyl, C_{3-8} cycloalkyl, C_{4-9} cycloalkylalkyl, phenyl, 4-methylphenyl, benzyl, -O-C_{3-8} cycloalkyl, -O-C_{4-9} cycloalkylalkyl, -O-phenyl, -O-4-methylphenyl, -O-benzyl, $-SO_2R^7$ or $-NHR^7$ wherein R^7 is H, C_{1-8} alkyl, phenyl, 4-methylphenyl, benzyl or $-NH_2$, and wherein each C_{1-20} alkyl, C_{2-20} alkenyl, C_{2-20} alkynyl, C_{3-10} cycloalkyl, C_4-C_{20} alkylcycloalkyl, C_{4-10} cycloalkenyl, C_{4-10} cycloalkynyl or C_6-C_{10} aryl optionally contains one to three heteroatoms selected from N, O and S;

or R and A, together with the nitrogen atom to which they are attached, form a 5- to 10-member heterocyclic ring or a 5- to 10-member heteroaromatic ring in which the free electron pair of the nitrogen atom to which R^1 and A is attached is not part of the aromatic pi-electron system, the 5- to 10-member heterocyclic or heteroaromatic ring being optionally substituted by one or more groups selected from C_{1-6} alkyl, C_{3-8} cycloalkyl, halogen, hydroxy, -OC_{1-6} alkyl or -OC_{3-8} cycloalkyl.

98. (Cancelled)

99. (Previously Presented) A method according to claim 95, wherein the concentration of said hypochlorite oxidant in said aqueous hypochlorite oxidant solution immediately prior to mixing with said nitrogen-containing compound is not more than 24,000 ppm as total chlorine.

100. (Previously Presented) A method according to claim 95, wherein said nitrogen-containing compound or mixture thereof is in an aqueous solution at a concentration of 0.5-60% w/v prior to mixing with the hypochlorite oxidant solution.

101. (Previously Presented) A method according to claim 95, wherein said mixing takes place in a mixing chamber into and out of which there is a continuous flow of water during said mixing.

102. (Previously Presented) A method according to claim 95, wherein said hypochlorite oxidant is selected from the group consisting of alkaline and alkali earth metal hypochlorites, hypochlorite released to water from a stable chlorine carrier and hypochlorite formed *in situ* from chlorine gas, and mixtures thereof.

103. (Previously Presented) A method according to claim 95, wherein said hypochlorite oxidant is selected from the group consisting of lithium hypochlorite, sodium hypochlorite, calcium hypochlorite, magnesium hypochlorite and potassium hypochlorite.

104. (Cancelled)

105. (Previously Presented) A method according to claim 95, wherein Y is selected from the group consisting of carbamic acid, sulfamic acid, glycine, glutamine, arginine, histidine, and lysine.

106. (Previously Presented) A method according to claim 101, wherein the concentration of said hypochlorite oxidant in said aqueous hypochlorite oxidant solution prior to mixing with said nitrogen-containing compound is not more than 24,000 ppm as total chlorine, and said mixing chamber comprises a conduit through which water flows as said hypochlorite oxidant solution and the nitrogen-containing compound are mixed.

107. (Previously Presented) A method according to claim 106, wherein said solution of hypochlorite oxidant is prepared *in situ* in said conduit prior to addition of said solution of said nitrogen-containing compound to said conduit.

108. (Previously Presented) A method according to claim 95, wherein said nitrogen-containing compound is diluted prior to mixing with the hypochlorite oxidant.

109. (Withdrawn) A method according to claim 95, wherein said medium is pulp and paper factory process water.

110. (Withdrawn) A method according to claim 95, wherein said medium is cooling tower water.

111. (Previously Presented) A method according to claim 95, wherein said medium is waste water or reclaimed waste water.

112. (Withdrawn) A method according to claim 95, wherein said medium is a clay slurry.

113. (Withdrawn) A method according to claim 95, wherein said medium is a starch slurry.

114. (Withdrawn) A method according to claim 95, wherein said medium is a sludge.

115. (Withdrawn) A method according to claim 95, wherein said medium is soil.

116. (Withdrawn) A method according to claim 95, wherein said medium is a colloidal suspension.

117. (Withdrawn) A method according to claim 95, wherein said medium is irrigation water.

118. (Withdrawn) A method according to claim 95, wherein said medium is a medium containing strong reducing agents.

119. (Withdrawn) A method according to claim 95, wherein said medium is a medium having a high reducing capacity.

120. (Cancelled)

121. (Cancelled)

122. (Previously Presented) A method according to claim 95, wherein the concentration of said biocide immediately prior to being applied to

said medium is from 1000 to 12,000 ppm expressed as total chlorine.

123. (Previously Presented) A method according to claim 95, wherein the concentration of said biocide in said medium, upon application of the biocide to said medium, is 0.5-300 ppm expressed as chlorine.

124. (Previously Presented) A method according to claim 95, wherein said biocide is effective within 1 hour of application to said medium.

125. (Withdrawn-currently amended) Apparatus for applying a biocide to a medium, comprising:

a nitrogen-containing compound reservoir containing a nitrogen-containing compound or mixture thereof selected from the group consisting of:

salts of the formula $Y^{x-}[NH_2R^3R^4]^{+}{}_x$, wherein x is 1 to 3, Y^{x-} is a basic form of an acid Y that contains at least one moiety selected from the group consisting of a primary amine moiety, a secondary amine moiety, an amide moiety, an imide moiety, a sulfamide moiety, a sulfimide moiety, and an amineimine moiety, and $[NH_2R^3R^4]^+$ is an acidic form of a base NHR^3R^4 wherein R^3 and R^4 are each independently selected from the group consisting of H and C_{1-8} alkyl, or R^3 and R^4, together with the nitrogen atom to which they are attached, form a 5- to 10-member heterocyclic ring optionally substituted by one or more

groups selected from C_{1-6} alkyl, C_{3-8} cycloalkyl, halogen, hydroxy, $-OC_{1-6}$ alkyl or $-OC_{3-8}$ cycloalkyl,

a source of hypochlorite oxidant dilution having a concentration of between not more than 24,000 ppm as total chlorine,

and a mixing chamber operable to mix the dilution and the nitrogen-containing compound or mixture thereof in a molar ratio of nitrogen atoms in the nitrogen-containing compound to the hypochlorite of at least 1:1, to produce the biocide in the mixing chamber, wherein said biocide has a pH of between 9.0 and 11.5 immediately prior to being applied to said medium.

126. (Cancelled)

127. (Withdrawn) Apparatus according to claim 125, wherein said source of hypochlorite oxidant dilution comprises a hypochlorite-containing reservoir containing a hypochlorite oxidant solution, and a diluter operable to dilute the hypochlorite oxidant solution to produce said hypochlorite oxidant dilution having a concentration of not more than 24,000 ppm expressed as total chlorine.

128. (Withdrawn) Apparatus according to claim 127, wherein said diluter and said mixing chamber are a single conduit which is adapted to dilute

said hypochlorite oxidant prior to mixing with said nitrogen-containing compound or mixture thereof.

129. (Currently amended) A method for controlling microbial or biofilm growth in a medium, the method comprising mixing a nitrogen-containing compound, a bromide and an aqueous solution of a hypochlorite oxidant to form a biocide, said nitrogen-containing compound being a salt of the formula $Y^{x-}[NH_2R^3R^4]^+_x$, containing nitrogen both in the cation portion and in the anion portion thereof, wherein

Y^{x-} is a basic form of an acid Y that contains at least one moiety selected from the group consisting of a primary amine moiety, a secondary amine moiety, an amide moiety, an imide moiety, a sulfamide moiety, a sulfimide moiety, and an amineimine moiety; and

$[NH_2R^3R^4]^+$ is an acidic form of a base NHR^3R^4 wherein:

R^3 and R^4 are each independently selected from the group consisting of H and C_{1-8} alkyl, or R^3 and R^4, together with the nitrogen atom to which they are attached, form a 5- to 10-member heterocyclic ring optionally substituted by one or more groups selected from C_{1-6} alkyl, C_{3-8} cycloalkyl, halogen, hydroxy, $-OC_{1-6}$ alkyl or $-OC_{3-8}$ cycloalkyl; and

x is 1 to 3;

and the molar ratio of $[NH_2R^3R^4]^+$ to hypochlorite is at least 1:1,

and applying said biocide to said medium, wherein said biocide has a pH of between 9.0 and 11.5 immediately prior to being applied to said medium.

130. (Previously presented) A method according to claim 95, wherein said nitrogen-containing compound is ammonium carbamate or ammonium sulfamate.

131. (Previously presented) A method according to claim 95, wherein said nitrogen-containing compound is ammonium carbamate.

132. (Previously presented) A method according to claim 95, wherein said hypochlorite oxidant is sodium hypochlorite.

133. (Previously presented) A method according to claim 95, wherein said hypochlorite oxidant is sodium hypochlorite, said nitrogen-containing compound is ammonium carbamate and said medium is waste water or reclaimed waste water.

134. (New) A method according to claim 95, wherein said biocide has a pH of at least 9.5 immediately prior to being applied to said medium.

135. (New) A method according to claim 95, wherein said biocide has a pH of at least 10.0 immediately prior to being applied to said medium.

136. (New) A method according to claim 95, wherein said biocide has a pH of at least 10.5 immediately prior to being applied to said medium.

137. (New) A method according to claim 95, wherein said biocide has a pH of at least 11.0 immediately prior to being applied to said medium.